Revised 10-22-21

LAP Bridge: Type, Size & Location (TS&L) procedures
(For Bridge Replacement Projects Only)

Preventative Maintenance and Rehabilitation projects do not require a TS&L.

Prior to development of preliminary plans, a Type, Size, and Location (TS&L) study shall be presented to the Michigan Department of Transportation Local Agency Program (MDOT LAP) bridge unit for review. This TS&L plan will be used to determine acceptability for funding by MDOT LAP on the basic design. The intent of the TS&L is to obtain concurrence from appropriate parties prior to the preliminary design of the project, thus expediting the process and minimizing delay in project development.

I. SUBMITTAL

A. Historic structure - For bridges eligible to be historic, a Finding of No Adverse Impact or a Finding of No Significant Impact (FONSI) must be granted prior to the TS&L submittal.

B. Time frame - TS&L plans should be submitted to the MDOT LAP prior to the anticipated GI submittal date.

C. Submit the NEPA form 5323 with the TS&L submittal.

II. REVIEW

A. EGLE - Send one copy of the TS&L plans to the Michigan Department of Environment, Great Lakes, and Energy (EGLE), when applicable. An EGLE permit application should be made concurrently with the TS&L submittal to MDOT LAP.

B. Local Agency - TS&L plans are to be reviewed by the local agency prior to submittal to MDOT LAP. The local agency will submit TS&L plans to MDOT LAP after appropriate reviews have been completed.

III. TS&L PLAN DEVELOPMENT

All bridge projects (new or replacement) must be designed per the AASHTO LRFD Bridge Design Specifications incorporating the HL-93 live loading at a minimum. It is highly recommended that the design meets the HL-93 Modified loading; in some circumstances, the HL-93 loading may require the bridge to be posted after opening.

All projects are to be designed per current AASHTO A Policy on Geometric Design of Highways and Streets and MDOT Bridge Design Manual and Guides.

The proposed TS&L is to depict the most cost-effective design which meets the engineering and environmental requirements. The TS&L plans may be presented on the General Plan of Site sheet. Other details and/or plan sheets may be included as required. These plans do not need to be elaborate if they convey the necessary information. The following information relevant to the design of the bridge must be considered during preparation of the TS&L and included in the plans when applicable.

A. English - All plans must be developed in English units of measure.

B. General Plan of Site Sheet

1. Traffic Data (present & future ADTs, posted & design speeds, % commercial)
2. Township, Section, and Range
3. Design Loading
4. Plan View of Project
    a) Stations Shown (include P.O.B. & P.O.E.)
    b) Utilities
    c) Flow direction and name of water course (if applicable)
    d) North Arrow
    e) Layout of Bridge
        1) superstructure (deck w/ dims and railing)
        2) approach
        3) wingwalls
        4) guardrail
    f) Survey and Construction Centerlines (shown tied to Section Corner or Control Point)
    g) Horizontal Alignment and/or Alignment Diagram
    h) Outline of Existing Bridge
    i) Topography

5. Elevation View
    a) Vertical Alignment
        1) All vertical curve data
            a) Grade Left
            b) Grade Right
            c) Length
            d) K value computed
        2) Existing and Proposed Alignments
        3) Existing Grades just outside the P.O.B. & P.O.E.

b) Span Lengths
c) Reference Point Stations and Elevations
d) Project Limits (include labels for P.O.B. and P.O.E.)
e) Abutment/Pier Type
f) Bottom of Abutment, Pier Footing Elevations
g) Pile Information: Capacity and Type (if applicable)
h) Water Surface Information (survey elevation & date and 100-year elevation)
i) Rip Rap, including headers
j) Stations and Elevations
k) Proposed Low Beam Elevation (vertical under clearance if applicable)

6. Benchmark Box
7. Existing Structure Information
8. Control Points or Horizontal Tie Points
9. Construction Staging Details (if applicable)

C. Preliminary Soils Data – If available at the TS&L stage. Soil borings are to be obtained as soon as possible after the TS&L review, and prior to submitting GI plans.

D. Waterway data (for water crossings).

1. Hydraulic table - to be completed for stream and river crossings, as shown in the MDOT Bridge Design Manual (including the 50 year and 100-year flood data for the existing and proposed structure). The design must be compatible with the appropriate downstream stream section.
2. Stream bank alignment is to be shown.
3. Scour - Any evidence of scour on the existing structure and/or riverbanks should be noted.
4. A scour analysis is required for all structure rehabilitation and replacement projects.
5. For scour critical structures a copy of the Scour Critical Bridge Plan of Action shall be submitted with the grade inspection package. (Applies to rehabilitation projects only).
6. Recreational activities on the waterway, i.e. canoes, etc., must be considered in the design.
7. Local authority for the watercourse and any local ordinances must be considered (County Drain Commission, U.S. Army Corps, etc.).
8. Waterway data for structures crossing lake channels with negligible hydraulic flow should include:
   a) Lake surface elevations, especially if varies at different times of the year.
   b) Navigational opening under the bridge (width and height at a particular elevation).

c) Water surface elevation for a 100-year event.

E. General Plan of Structure Details

1. Typical Bridge Cross Section
   a) Lane and Shoulder Widths shown include centerline label
   b) Shoulder to Fascia Distances dimensioned
   c) Centerline to Fascia Distances dimensioned
   d) Out to Out of Fascia dimensioned
   e) Sidewalk dimensions (if applicable)
   f) Deck Material and Thickness shown
   g) Deck Cross Slope shown
   h) Railing Type indicated
   i) Number and Type of Beam shown
   j) Earth Slopes shown (include existing and proposed)
   k) Rip Rap shown
   l) Pile Type and Nominal Resistance (R=ndr) shown (include pile batter)
   m) Limits of Backfill and Excavation shown
   n) Cofferdams shown

2. Section through Abutments
   a) Deck thickness and material
   b) Beam type and size w/ backwall type (if applicable)
   c) Approach slab type

3. Approach Typical
   a) Lane and Shoulder widths
   b) Clear roadway width (curb to curb)
   c) Guardrail Type
   d) Road/Subbase Material

F. Participation limits

1. Approach construction is limited to work within limits defined by “touchdown” points to the existing approach grade.

The TS&L plans will either be found acceptable as is, acceptable subject to comments, or not acceptable, the latter requiring revisions to be made and the TS&L resubmitted.
Acceptance of the preliminary and final plans will be contingent upon consideration of the TS&L review comments, issuance of the EGLE permit, review of the geotechnical information, and any other information which may become available after the TS&L submittal.

For Plan Review (Grade Inspection) requirements see document titled “Items Required for Grade Inspection” on the MDOT Local Government Agencies website.